

**Commonwealth of Kentucky
Division for Air Quality**

PERMIT APPLICATION SUMMARY FORM

Completed by: Lisa Beckham

GENERAL INFORMATION:

Name:	TVA - Paradise Fossil Plant
Address:	13246 State Route 176, Suite 10 Drakesboro, KY 42337-2345
Date application received:	4/29/2009
SIC Code/SIC description:	4911, Electric Services (fossil fuel power generation)
Source ID:	21-177-00006
Source A.I. #:	3239
Activity ID:	APE20090002
Permit:	V-07-018R1

APPLICATION TYPE/PERMIT ACTIVITY:

<input type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input checked="" type="checkbox"/> Permit modification	<input type="checkbox"/> Conditional major
<input type="checkbox"/> Administrative	<input checked="" type="checkbox"/> Title V
<input checked="" type="checkbox"/> Minor	<input type="checkbox"/> Synthetic minor
<input type="checkbox"/> Significant	<input type="checkbox"/> Operating
<input type="checkbox"/> Permit renewal	<input checked="" type="checkbox"/> Construction/operating

COMPLIANCE SUMMARY:

<input type="checkbox"/> Source is out of compliance	<input type="checkbox"/> Compliance schedule included
<input checked="" type="checkbox"/> Compliance certification signed	

APPLICABLE REQUIREMENTS LIST:

<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input type="checkbox"/> PSD	<input type="checkbox"/> NESHAPS	<input type="checkbox"/> Other
<input type="checkbox"/> Netted out of PSD/NSR	<input type="checkbox"/> Not major modification per 401 KAR 51:001, 1(116)(b)	

MISCELLANEOUS:

- ☒ Acid rain source
- ☐ Source subject to 112(r)
- ☐ Source applied for federally enforceable emissions cap
- ☐ Source provided terms for alternative operating scenarios
- ☐ Source subject to a MACT standard
- ☐ Source requested case-by-case 112(g) or (j) determination
- ☐ Application proposes new control technology
- ☒ Certified by responsible official
- ☒ Diagrams or drawings included
- ☐ Confidential business information (CBI) submitted in application
- ☐ Pollution Prevention Measures
- ☐ Area is non-attainment (list pollutants):

EMISSIONS SUMMARY:

Pollutant	Actual (tpy)¹	Potential (tpy)
PM/PM ₁₀	3554/2299	9071/5079
SO ₂	30593	120896
NO _x	34345	95639
CO	1975	2541
VOC	381	639

¹ Based on 2008 KyEIS

SOURCE DESCRIPTION:

The facility consists of three cyclone-furnace coal-fired boilers, three distillate oil-fired heating boilers, eleven distillate oil-fired space heaters, three natural-draft cooling towers, and solid fuel, limestone, ash, and gypsum handling processes.

Coal is delivered by rail, truck and barge. Currently, most of the coal is cleaned in a coal wash plant prior to delivery to the coal fired boilers. Tennessee Valley Authority (TVA) is currently cofiring coal fines and plans to begin cofiring wood waste. Waste products from sawmills and other wood-working facilities will be burned at a maximum of 5% of the boilers heat input (13% by weight).

All three coal-fired boilers are equipped with staged overfire air and selective catalytic reduction modules for nitrogen oxides emission control. Boiler Units 1 and 2 are equipped with venturi-type limestone slurry flue gas desulfurization scrubbers. Boiler Unit 3 is equipped with an electrostatic precipitator and a wet limestone Flue Gas Desulfurization (FGD) scrubber. Fly ash collected by the Electrostatic Precipitator (ESP) is sluiced by the wet fly ash handling system to the fly ash pond for disposal. Bottom ash (slag) is wet sluiced to a storage pond, dewatered and then reclaimed for sale to an offsite customer. Gypsum waste slurry effluent from the limestone FGD scrubbers is wet sluiced to the onsite stacking area for disposal.

All transfers from coal conveyors are within enclosures unless otherwise noted. Foam suppression is also used as needed to provide fugitive emissions control for the conveyors feeding the old conditioners (BC-11 and BC-12), the new conditioners, and breakers 1-7 (BC-1, BC-2, BC-3, BC-50 and BC-51), compliance coal reclaim (BC-18), transfer station H (BC-32 and BC-54) and conveyor BC-55. A water spray is used as needed for fugitive emissions control on BC-49 in the barge unloader loop.

TVA has renumbered most of the emission points from its previous permits. Appendix A to the Statement of Basis contains a listing comparing the new numbering system with previous permits, as well as the identification number used in the Division for Air Quality (Division) emission inventory system.

MINOR PERMIT REVISION – V-07-018 REVISION 1:

In this permitting action, the Division is revising the Statement of Basis (SOB) and modifying the Title V permit issued to the Tennessee Valley Authority (TVA) – Paradise Fossil Fuel Plant for two purposes. First, TVA submitted a minor revision to provide pollution controls for the reduction of

sulfuric acid mist (SO₃). Second, the Division has been ordered by EPA to respond to issues related to Permit #V-07-018 that were raised by Petitioners on December 27, 2007.

On April 29, 2009, TVA submitted an application for a minor revision for its Paradise Fossil Plant in Drakesboro, Kentucky. As part of an opacity mitigation project for Units 1-3, TVA will be adding hydrated lime injection (HLI) prior to the wet flue gas desulfurization (WFGD) on each unit. Based on testing conducted at the facility an increase in emissions from units 1-3 is not expected as a result of the HLI. The project is expected to reduce emissions of SO₃ up to 1,850 tons per year (TPY).

In a letter dated July 24, 2009, and received by the Division on July 29, 2009, U.S. EPA Region 4 provided the Administrator's Order responding to the Petition (Petition No. IV-2007-3). The Petition requested U.S. EPA to object to the Title V permit issued to the TVA – Paradise Fossil Fuel Plant. In accordance with 40 CFR 70.7(g)(4), the Division shall adequately resolve any EPA objection within ninety (90) days of receiving the Administrator's objection.

EMISSIONS AND OPERATING CAPS DESCRIPTIONS:

1. Coal processed through Emission Units 22, 23, 25-31, 35, 39, and 40 shall not exceed 13,000,000 tons per any 12 consecutive months [Permit No. O-87-012].
2. Total emissions of particulate matter from the Coal Washing Plant (Emission Units 22, 23, 25-31, and 35) shall not equal or exceed 100 lb/hour, 1000 lbs/day, and 50 tons/year [Permit No. O-87-012].
3. To preclude applicability of 401 KAR 51:017, particulate matter emissions from limestone handling, Emission Units 41-52, shall not exceed 25 tons in any 12 consecutive months. . [Permit No. O-87-012]
4. Emission Units 53 and 54 are decommissioned and shall not be operated.
5. Emission Units 75 and 76 are limited to 900 tons/hour and 600 tons/hour respectively [Permit No. O-87-012].
6. To preclude applicability of 401 KAR 51:017, coal fines processed through Emission Units 79-84 shall not exceed 750,000 tons per any 12 consecutive months.
7. To preclude the applicability of 401 KAR 63:020, for arsenic or other metal preservative emissions, the source shall not combust wood treated with arsenic (CCA) or other metals as preservatives.
8. Bypass of the Emission Unit 3 scrubber shall be limited to 720 hours in any 12-consecutive months [V-07-018].